

WHAT IS CLAIMED IS:

1. A method of producing a bone substitute material predominantly composed of carbonate apatite for medical use, which comprises the step of forming carbonate apatite by contacting a block of calcium compound with a phosphate-containing solution, wherein said calcium compound block contains substantially no powders, wherein at least one of said calcium compound block and said phosphate solution contains a carbonate group, and wherein the method does not include any sintering step.

2. The method of producing a bone substitute material for medical use as claimed by claim 1, wherein the block of calcium compound is one prepared using an artificially synthesized calcium compound.

3. The method of producing a bone substitute material for medical use as claimed by claim 2, wherein the calcium compound block prepared using an artificially synthesized calcium compound is a foamed calcium compound.

4. A bone substitute material produced by any one of the methods as claimed claims 1 through 3, wherein the material is predominantly composed of carbonate apatite with carbonate group content of 0.5% or more by weight.